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# VENTURA COUNTY LOCAL COASTAL PROGRAM DRAFT WORKING PAPER BEACH EROSION AND SHORELINE STRUCTURES IN THE COASTAL ZONE

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# DRAFT WORKING PAPER
# BEACH EROSION AND SHORELINE STRUCTURES IN THE COASTAL ZONE

This report is a draft working paper. Any proposed findings or recommended policies included in the report are preliminary and subject to revision, and are not adopted County policies.

This report was prepared with financial assistance from the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, under the provisions of the Federal Coastal Zone Management Act of 1972.

Ventura County Environmental Resource Agency
Planning Division

May 1979

## ABSTRACT

This report is a draft working paper designed to provide background information and preliminary policy guidance for the Ventura County Local Coastal Program (LCP) for the unincorporated coastal zone portions of the County. The LCP is a state mandated planning program which requires coastal cities and counties to bring their general plans and zoning ordinances into conformity with the State Coastal Act of 1976.

The focus of this report is the impact of beach erosion and the provision of shoreline structures to reduce wave and erosion damage. The Coastal Act contains explicit policies regarding the construction of shoreline structures. In summary, these policies recognize that structural solutions may pose secondary impacts (e.g., downcoast erosion) and, therefore, proper site location of new development is required. To accomplish this, the Coastal Act requires that new development be located in areas which are not severely threatened by beach hazards and where shoreline structures are not required. The Act does, however, allow contruction of shoreline structures to protect existing development, public recreation or coastal dependent uses.

The draft findings and proposed policies included in this report respond to the shoreline structures policies of the Coastal Act exclusively. Working papers will also be prepared on Energy, Habitats, Recreation, Agriculture, Public Works, and Housing. The draft findings and proposed policies of these forthcoming reports may necessitate revisions to this report in order to resolve identified conflicts and to promote consistency.

These working papers will be utilized in the development of the LCP Land Use Plan which will set forth land use designations and policies which conform to the Coastal Act. The LCP Land Use Plan will be reviewed by the Ventura County Board of Supervisors, and the regional and State Coastal Commissions. Once the LCP Land Use Plan has received local, regional and State approval, the County must prepare an LCP implementation plan, including zoning, which conforms to the approved LCP Land Use Plan.

TABLE OF CONTENTS

## I. Introduction

Coastal beach erosion is part of a dynamic, natural process and is, therefore, a very complex problem. Man-made shoreline alteration can have severe effects on this natural process and must be closely reviewed. Short-sighted solutions may aggravate erosional problems and pose secondary erosional impacts. Effective beach erosion management, therefore, requires a comprehensive understanding of the erosional process, as well as technically oriented, long-term management plans.

### A. Coastal Act Policies:

In recognition of natural shoreline processes, and the primary and secondary hazards which may result from interference with shoreline processes, the Coastal Act of 1976 contains specific policies regarding shoreline alterations. The primary Coastal Act policies regarding shoreline structures are included in Section 30235 and Section 30253 of the Act which state:

> "30235. Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.
>
> 30253. New development shall: (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard. (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs."

In summary, this policy states that protective shoreline structures shall only be constructed under circumstances wherein the structure is required to protect: (1) coastal dependent uses, (2) existing structures, or (3) public beaches. Additionally, Section 30235 requires that construction of shoreline structures under the above circumstances shall eliminate or mitigate adverse impacts on down coast sand transport or supply. The Coastal Act, therefore, requires that new coastal development (with the exception of coastal dependent uses or public recreation facilities) shall be located in areas where beach erosion hazards are minimal and where no additional shoreline protection is needed.

In order to attain the intent of these policies, this paper provides a brief summary of erosional processes and their effect, and proposes policies to mitigate beach hazards in conformity with the Coastal Act.

B. The Beach Erosion Process

Weathering of inland rocks generates sand, which is the primary beach building sediment. Material produced by the weathering process becomes suspended in water runoff and is transported via rivers and streams to the sea.

Once deposited into the sea, sand may become part of a natural process known as littoral drift. Littoral drift causes sand to move parallel to the coastline. The energy that perpetuates this phenomenon results from a component of angular wave movement along the shoreline (Ventura County, Seismic Safety Element, 1974).

The coastal region is divided into a series of littoral cells. These are closed systems of shoreline in which sand undergoes a complete transport cycle. Most sand enters the cell at a river mouth, undergoes littoral drift, and terminates the cycle in a submarine canyon. Submarine canyons are deep depressions in the ocean floor. They act as sinks, removing sediment from the littoral cell making it unavailable for further beach replenishment (Seismic Safety Element, 1974).

In addition to lateral movement of sand along the shoreline, there is an onshore-offshore deposition-accretion pattern caused by wave action. Waves that are small or spaced far apart tend to move sand from the ocean floor toward the shore, thus building sandy beaches. In contrast to this sand build-up, large or closely spaced waves tend to reduce beaches, carrying sand seaward. The onshore-offshore movement of sand is greatly dependent on weather conditions and usually follow seasonal fluctuations (Seismic Safety Element, 1974).

The maintenance of sandy beaches is critical because they serve as a natural buffer between wave action and easily eroded uplands. Sandy beaches tend to dissipate wave energy and receive very little damage. Naturally occurring buffer zones (such as coastal dunes) are generally much more effective at reducing wave damage and protecting the coastline than are man-made protective devices (Department of Navigation and Ocean Development, 1979).

C. Effects of Man-Made Activities

1. Sand and Gravel Mining Operations

Sand and gravel mining operations have tne potential to reduce beach-destined sand supplies in two ways: the extraction of sand inherently decreases the amount of sand which may have replenished the beaches; and the creation of open pits acting as "sand traps" which may reduce or interrupt sand flow to the sea (Seismic Safety Element, 1974). The effects of sand and gravel operations in Ventura County are not known at this time.

2. Dams and Flood Control Projects

Dams and flood control projects also have the potential to reduce the amount of sand reaching the beaches. Water retention dams account for the decline of shoreline sand supplies in several ways: 1) sediment entrapment; 2) decreasing the watershed area capable of supplying beach sand; and 3) lowering of stream velocities, thus reducing their sediment holding capacity and inducing less erosion.

Flood control projects, such as debris basins, act as "sand traps" removing sand from riverine transport. Channelization of streams decreases the surface area of erodible material and therefore results in sand reduction (Seismic Safety Element, 1974).

3. Groins, Jetties, Seawalls, and Breakwaters

Groins are structures designed to maintain a protective beach by trapping littoral sand. Structures of this type can remedy localized erosion problems. However, by trapping sand which was destined for downcurrent beaches, groins may relocate erosional problems.

Breakwaters and jetties are usually employed to protect harbors from wave activity. These structures, usually larger than groins, tend to block littoral sand, resulting in erosion of the downcurrent beaches. Expensive sand bypassing or dredging techniques are commonly needed to replenish downcurrent beach areas. Large structures of this type can also alter wave patterns such that the shoreline will be modified until it reaches an equilibrium shape (Department of Navigation and Ocean Development, 1979).

Seawalls are built to protect beachfront structures from wave damage. Seawalls tend to reflect the wave energy backward, resulting in the gouging out of sand seaward of the wall. This effect ultimately reduces the amount of beach available for recreation (Seismic Safety Element, 1974). Seawalls commonly inhibit the erosion of bluffs or cliffs by the ocean thus tending to decrease sediment flowing down current. Interruption of the natural sea cliff retreat process can result in downcoast erosional problems.

4. Harbors

Harbors usually require the construction of a jetty or breakwater and dredging. The initial dredging of a harbor can have temporary sand accretion effects downcurrent of the dredging. If adequate systems to bypass sand around the harbor entrance are not provided, nearby beaches that depend on a natural sand supply, will be eroded (DNOD, 1979).

## II. SUMMARY OF BEACH EROSION ACTIVITIES IN VENTURA COUNTY

### A. General Overview

Coastal erosion in Southern California exhibits seasonal trends in addition to dramatic fluctuations caused by heavy storms. Beaches generally advance during the summer months, when wave action is low to moderate, and recede during the winter months when surf conditions are considerably rougher. This is in part due to variations in the rate of stream and river sand deposition and subsequent littoral drift. The amount of sand brought down the rivers to the ocean varies tremendously from year to year, depending on the amount of discharge and rainfall, with practically no deposition during dry seasons.

Ventura County has three major sources of beach sand: the Santa Clara River (contributing 60%), the other rivers and streams (10%), and beaches upcoast of the Ventura River (30%). The total volume of sand contributed by these sources is estimated to vary from 200,000 to 1,700,000 cubic yards or 1,000,000 cubic yard average (Ventura County Flood Control District, 1979). This sand becomes part of the Santa Barbara littoral cell in which the north to south littoral drift terminates in the Mugu and Hueneme submarine canyons.

In a recent study by the California Department of Navigation and Ocean Development, the section of coast between Santa Barbara and Point Mugu was referred to as "...probably the most critical within the state with regard to future development and beach erosion..." Many of the beaches in this area have never fully recovered from the initial blockage of easterly sand movement by the construction of Santa Barbara harbor (DNOD, 1979).

Presently 22% of Ventura County's watershed is behind dams and several sand and gravel operations are in production. Increases in the number of diversions and mining operations in the future may affect these erosional problems and the coastline configuration of the County. The potential effects of sand mining oeprations are being studied by local, state and federal agencies.

### B. Sub-Area Descriptions

#### 1. North Coast

The stability of the beaches on the North Coast of Ventura County is dependent on the dredging operations of Santa Barbara harbor as well as local streams (DNOD, 1979). Appendix 1 includes shoreline erosion maps prepared by the Department of Navigation and Ocean Development (DNOD) which are referenced below.

Rincon Point Beach - Gradual erosion of the beach is occurring in this area of the beach which reduces the wave action buffer. There is wave damage and flooding during periods of high tides and high wave action. This has caused the Department of

Navigation and Ocean Development to classify this area as "Present Use Critical."* As the beach continues to erode, there may be more serious problems with wave damage. (Ventura County Public Works Agency, 1976).

Mussel Shoals - This area exhibits large seasonal fluctuations of sand. During high tides and high wave periods, residential homes are endangered. DNOD has classified this area as "Present Use Critical." During the 1978 winter storms, a rock seawall was constructed to protect four homes. Cumulatively, the erosion is gradual, and as the buffer zone decreases there may be a need for additional protective structures. (Ventura County Public Works Agency, 1976). During the 1977-1978 winter storms, the cost to protect the homes was estimated at approximately $20,000. (California Coastal Commission, 1978).

Seacliff Colony - Oceanfront homes in this area experience flooding during periods of large waves and high tides. According to the North Coast "Community" Designation Final Environmental Impact Report, wave damage and erosion in this area have been aggravated by the construction of the new U.S. 101 overpass upcoast of Seacliff, which obstructed sand transport and beach replenishment. As a result, CALTRANS constructed a seawall to retard erosion along the Seacliff Colony and Hobson County Park. According to the Ventura County Public Works Agency, this revetment shows signs of deterioration which may result in exposure of existing homes to more severe wave damage (North Coast "Community" Final Environmental Impact Report, 1977). Additionally, under current zoning, ten new beach residential units could be constructed which may require review of the existing seawall for structural adequacy.

Hobson Beach Park - CALTRANS has constructed a rock revetment along this beach. Prior to its construction, there was severe erosional damage. There is concern that the rock revetment may be inadequate to withstand considerable wave action and the structure may need improvement. (Ventura County Public Works Agency, 1976).

Faria Beach Park - The park has suffered severe damage during high tides and high wave action. The erosion rate of the shoreline is 1.3 feet per year. (Army Corps Engineers, 1978). Deposition of debris during storms has several times led to the closure of the park. DNOD has classified this area as "Present Use Critical" based on present damage and potential damage caused by wave action and beach erosion. If erosion continues at the same high rate, protection structures will be needed to maintain the recreational capacity of the park. (Ventura County Public Works Agency, 1976). Currently, the Ventura County Property Administration Agency is requesting a permit from the Regional Coastal Commission to accomplish these improvements.

* DNOD defines "present use critical" as areas where shoreline facilities exist which are subject to damage from wave action."

Faria Beach Colony - The beach in this area is continually eroding, undermining the seawalls which protect the beach front homes. Many of the homes are subject to flooding during times of high tides and high wave action. DNOD has classified this area as "Present Use Critical". Some of the seawalls are deteriorating and may need improvements. DNOD has designated an open space area in the "cove" of Faria Community, as well as a strip of land between Faria Community and Solimar (8 to 8.5 miles east of County border), as "Future Use Critical."* This classification is based on existing erosion conditions (Ventura County Public Works Agency, 1976). During the 1977-1978 winter storms, over 25 beach front homes suffered damage. The cost of restoring these homes has been estimated to be between $5,000 to $10,000 each (California Coastal Commission, 1978).

Solimar Beach Colony - Continuous erosion is undermining seawalls in this area. The deteriorating seawalls will need improvements in order to protect the ocean front homes (Ventura County Public Works Agency, 1976). The Department of Navigation and Ocean Development has classified this area as "Present Use Critical" because of the wave and erosional damage.

Old Highway 101 Beach Front - A rock revetment exists, protecting Old Highway 101 from erosion and wave action. Along some parts of the highway, the wave splash periodically creates a hazard for motorists. (Ventura County Public Works Agency, 1976).

Emma K. Wood State Beach - A continuous erosion rate of 0.6 feet per year has reduced the size of the park and caused a considerable amount of damage. The wave damage and erosion caused by the 1977-1978 winter storms were the most extensive in the County. Damage was estimated at $75,000 and caused closure of the park for several months. (California Coastal Commission, 1978). DNOD has classified the area just west of the Ventura River as being "Future Use Critical." Immediately west of this is an area designated "Present Use Critical."

2. Central Coast (Unincorporated area only)

Hollywood Beach - There is no serious beach erosion problem in this area. (Ventura County Public Works Agency, 1976). A jetty at the north entrance of Channel Islands Harbor helps to stabilize the beach (DNOD, 1979). The Army Corps of Engineers verifies these findings by indicating no erosion rate for the area.

Silver Strand Beach - There is very little erosion problem along this beach. One middle area of the beach is subject to continuous erosion, however no damage to beach front structures occurs. Bulldozers pile sand into dikes to protect the beach

* DNOD defines "future use critical" as undeveloped shoreline subject to erosion.

front homes from wave runup during periods of high tides and high wave action. The eroded sections of the beach is stabilized by sand replenishment by the Army Corps of Engineers, by request of the Ventura County Flood Control District (Ventura County Public Works Agency, 1976).

3. South Coast

Point Mugu State Park (Sycamore Beach) - There is major erosion during the winter months, especially on the east end of the park (Ventura County Public Works Agency, 1976). The Army Corps of Engineers indicates a 1.9 foot per year erosion rate indicating the severity of the condition. The easterly section of the park has encountered several landslides which may have been associated with this wave erosion. However, construction of Highway 1 along the base of the slope at the shoreline has provided significant protection for the slope landward of the Highway. The narrow beach seaward of Highway 1 is unprotected and considered to be unstable.

South Coast "Community" Area (Solromar) - Severe beach erosion is taking place near the residential area west of the mouth of Little Sycamore Canyon (South Coast Community Designation and Rezoning Study, Final EIR, 1977). During the winter of 1972, seven of eighteen homes in this area suffered damage due to high wave action and erosion. The problem has become more severe in the last ten years. More damage can be expected in this area for the future (Ventura County Public Works Agency, 1976). The Army Corp of Engineers indicates a 0.9 foot per year erosion rate for this area. Construction of new residential units on existing legal lots within the "Community" area may require special review by the Ventura County Flood Control District to ensure that new development does not incur substantial wave and erosion damage or require new shoreline structures which do not conform to the Coastal Act.

## III. Implications of the Coastal Act

Mitigation of the foregoing shoreline hazards must be carried out in a manner consistent with Sections 30235 and 30253 of the Coastal Act. The Coastal Act requires that new shoreline development be located in areas where shoreline erosion hazards are minimal (Section 30253). Additionally, the Act specifies that construction and/or maintenance of shoreline structures shall be limited to protection of existing development, coastal-dependent uses, and public recreation (Section 30235). Finally, all new or improved shoreline revetments must avoid or mitigate adverse impacts on natural shoreline processes (Section 30235). These policies are applied below on a sub-area basis.

### A. North Coast

#### 1. Existing "Community" Areas

There are five existing residential areas along the immediate shoreline of the North Coast (Rincon Point, Mussel Shoals, Seacliff, Faria and Solimar). Nearly all existing residential units in these areas have an existing protective shoreline structure (rip-rap or seawall). The Coastal Act allows construction and/or maintenance of shoreline protective structures to protect existing development. Therefore, maintenance of existing shoreline structures for existing development appears to conform to the Coastal Act. Within the "Community" areas, however, there are vacant shoreline lands which, without the introduction of substantial shoreline structures, would be subject to severe beach erosion. In these areas proper site location (setbacks) or engineering (pilings) should be given consideration prior to the introduction of new shoreline structures. In all cases, new shoreline structure construction or maintenance should be reviewed by VCFCD to ensure that no adverse impacts on shoreline processes or downcoast erosion patterns result.

#### 2. Existing Roads

Approximately 34,000 linear feet of the North Coast shoreline is comprised of very narrow beach areas, with seawall construction to protect U.S. Highway 101 or Old Highway 101. Insofar as roads may be considered existing development, routine maintenance of these seawalls conforms to the Coastal Act. In all cases, new shoreline structure construction or maintenance should be reviewed by VCFCD to ensure that no adverse impacts on shoreline processes or downcoast erosion patterns result.

#### 3. Park and Recreation Areas and Coastal-Dependent Industry

A major portion of the North Coast shoreline is in park and recreational uses or coastal-dependent industry (e.g., oil piers, etc). Construction or maintenance of shoreline structures to

protect these uses conforms to the Coastal Act. New shoreline protection structures be reviewed by VCFCD to ensure that downcoast erosion obstructing natural processes does not occur.

B. Central Coast

Existing development in the unincorporated Central Coast includes the beach residential communities of Hollywood and Silver Strand, and the Channel Islands Harbor. The wide beach (County public beach) along Hollywood and Silver Strand affords natural protection from wave damage. Maintenance of the beach (replenishment) rather than structural solutions are, therefore, recommended should shoreline erosion problems become evident in the future.

Channel Islands Harbor is a coastal-dependent use. Maintenance of existing structures (breakwaters, etc.), therefore, conforms to the Coastal Act. Any substantial changes in the design of existing or introduction of new protective structures should, however, demonstrate that no adverse impacts on natural shoreline processes or downcoast erosion will result, and should incorporate as a condition of development all reasonable mitigation measures. In order to accomplish this, engineering geology and coastal engineering report to be reviewed by VCFCD should be required for any substantial changes in the design or configuration of the Harbor's shoreline structures.

C. South Coast

Similar to the North Coast, the South Coast's shoreline is comprised of park and recreational uses, Highway 1, and existing developed areas.

1. Existing "Community" Areas

The community of Solromar is largely developed with varying types of shoreline improvements. Protection of existing structures appears to conform to the Coastal Act. Vacant shoreline parcels within the "Community" area should, however, give consideration to proper site location (setbacks) or engineering (pilings) prior to the introduction of protective structures. In all cases, new shoreline structure construction or maintenance should be reviewed by VCFCD to ensure that no adverse impacts on shoreline processes or downcoast erosional patterns result.

2. Existing Roads and Recreational Areas

The Coastal Act allows construction or maintenance of shoreline structures to protect public recreation or existing development. Repair or improvement of existing structures to protect Highway 1 and Point Mugu State Park, therefore, conforms to the Coastal Act provided no adverse impacts on natural shoreline processes or downcoast erosion result.

D. Privately Owned Undeveloped Shoreline Areas

There are approximately 24,259 linear feet (lf) of privately owned, undeveloped shoreline (North and South Coasts only) in the County's coastal zone which is not within a "Community" area. In all cases, these areas are comprised of very narrow beach areas and experience severe beach erosion. Private residential development in these areas would require substantial shoreline alteration and protective structures which would not conform to the Coastal Act, and could pose a significant hazard to private property if developed. These areas are located: (1) a strip between Seacliff and Faria on the North Coast (8,200 lf); (2) a strip between Faria and Solimar (2,200 lf); and (3) a strip between Point Mugu State Park and Solromar (13,900 lf). Protection of existing development (roadways) or public recreation in these areas would, however, conform to the Coastal Act.

## IV. Proposed Local Programs and Policies

Sections 30235 and 30253 of the Coastal Act require that shoreline structures should only be constructed to protect existing structures, coastal-dependent uses, or public beaches. In order to meet the intent of the Coastal Act, the following local policies are proposed:

1. Construction or maintenance of shoreline structures shall be limited to those projects necessary for the protection of existing "Community" areas as designated by the County Open Space Element; public recreation, existing roadways or coastal-dependent uses. No additional private development outside of "Community" areas which would require new shoreline structures shall be approved.

2. Shoreline structure projects, as permitted in Policy 1, shall be reviewed by the Ventura County Flood Control District (VCFCD) to ensure that no adverse impacts on natural shoreline processes, or downcoast erosion will result from the project. Development of any shoreline structure, seaward of the mean high tide or which does not essentially parallel the base of the bluff, shall require a coastal engineering and geology report, documenting effects on the shoreline erosion problems and shall incorporate all reasonable mitigation measures as a condition of project approval.

3. New private development within "Community" areas, and immediately along the shoreline, shall submit an engineering assessment of the adequacy of the site location and design, relative to beach erosion or wave action, to be reviewed by the Ventura County Flood Control District prior to project approval or recordation.

4. Any shoreline structures permitted pursuant to policies 1, 2 and 3, shall not interfere with the public right to access to navigable waters and shall demonstrate that no adverse impacts on beach or intertidal habitats or organisms will result. To accomplish this, any applicant for a shoreline structure permit shall specify:

   (a) The location and adequacy of beach access points within and immediately adjacent to the shoreline structure project area, and, the impact the proposed structure would have on the public's right to access. If the proposed structure affects existing access, mitigation and compensation measures may be required to replace or enhance access and public safety unless adequate access exists nearby or provision of access would impact public safety or sensitive habitats.

   (b) The location and timing of construction of shoreline structures and the impact of such structures on critical life cycles in beach or rocky intertidal areas on site, including nesting, breeding or spawning cycles. Wherever possible, shoreline structures which enhance habitat values (artificial substrate for intertidal organisms) shall be encouraged.

5. As part of the LCP Implementation Program, site design and engineering criteria for erosion-prone areas shall be developed. Additionally, a program for the administration of shoreline structure policies at the permit level shall be developed. In order to accomplish this, Planning staff in conjunction with the Ventura County Flood Control District (VCFCD) shall prepare a coastal development overlay zone, which conforms to the maximum extent possible and appropriate to the model zone included in Appendix 2. The overlay zone shall specify:

   (a) permitted land uses in conformance with Policy 1 (e.g., public recreation and coastal dependent uses, and infilling of existing "Community" areas consistent with public safety);

   (b) the type and design of shoreline structures including regulations governing the extent of shoreline alteration;

   (c) beach and bluff setback requirements, and site and structure design criteria to reduce erosion hazard;

   (d) criteria for the review of the adequacy of submitted engineering and geologic reports;

   (e) criteria for the protection of public access and;

   (f) criteria for the assessment of impacts of shoreline structures on natural resources including sand transport and sensitive habitats.

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4. Planning for an Eroding Shoreline, (Draft Report), California Coastal Commission, 1978.

5. Final EIR for South Coast "Community" Designation and Rezoning Study, Ventura County Environmental Resource Agency, 1977.

6. Final EIR for North Coast "Community" Designation, Ventura County Environmental Resource Agency, 1978.

7. Assessment and Atlas of Shoreline Erosion Along the California Coast, California Department of Navigation and Ocean Development, 1979.


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## Persons and Agencies Contacted

1. Dennis Hogel, Director, City of Oxnard Public Works Department
2. Bill Hayden, Ventura County Flood Control District
3. Fran Sallas, Ventura County Flood Control District
4. Stephen Chase, Associate Planner, Ventura County Environmental Resource Agency, Planning Division

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## APPENDIX

1. Shoreline Condition Map Series prepared by Department of Navigation and Ocean Development, Assessment and Atlas of Shoreline Erosion Along the California Coast, 1979.

2. Coastal Development Overlay Zone, Model Ordinance, from Planning for an Eroding Shoreline, California Coastal Commission, 1978.

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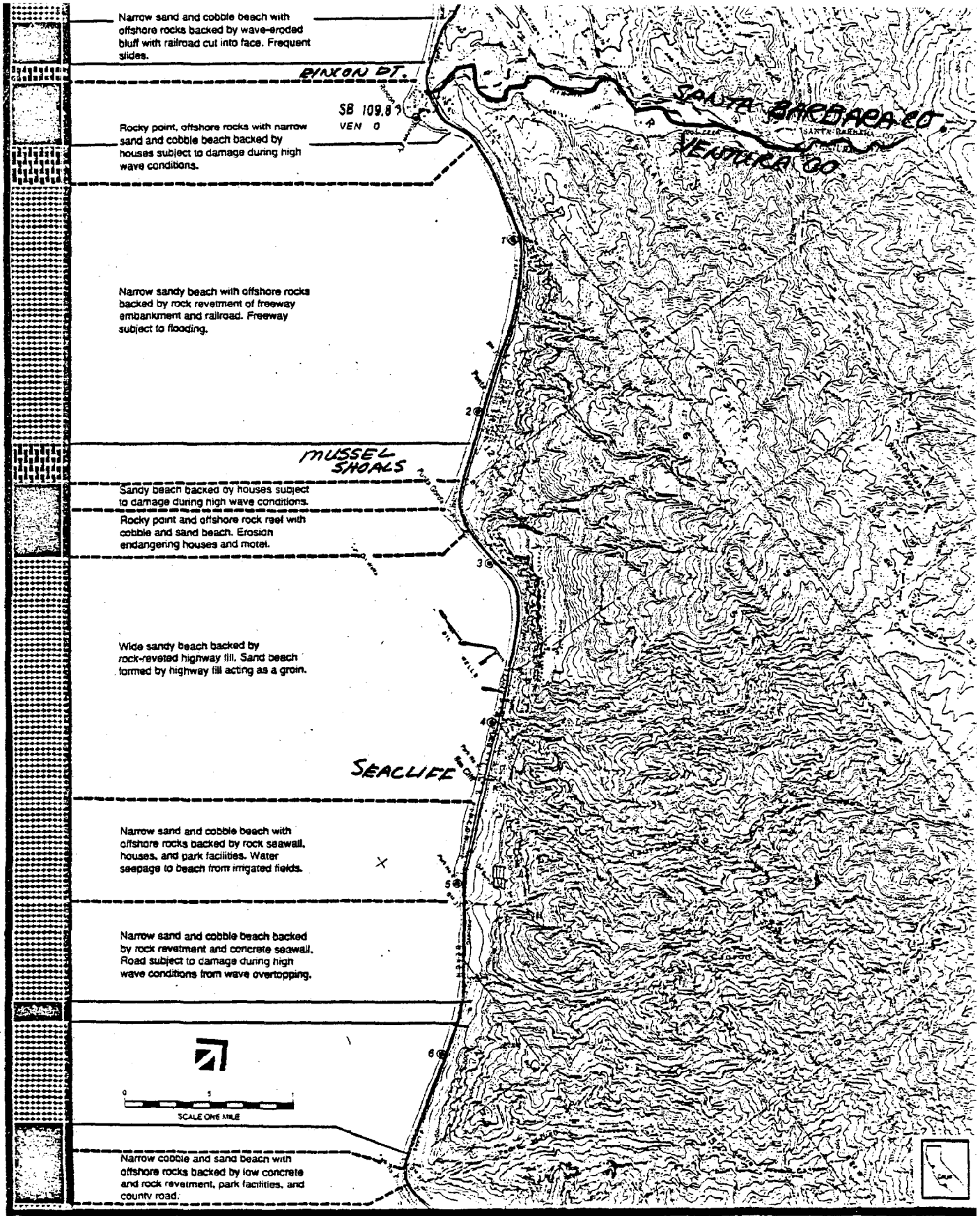


• SHORELINE CONDITION •

- PRESENT DEVELOPMENT CRITICAL
- ARTIFICIAL PROTECTION
- PRESENT DEVELOPMENT NON-CRITICAL
- PROTECTIVE BEACH
- FUTURE DEVELOPMENT CRITICAL
- STABLE ROCK

SANTA BARBARA CO. — MI. 109-109.8
VENTURA CO. — MI. 0-6

ISSUE NUMBER 99

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DEPARTMENT OF NAVIGATION & OCEAN DEVELOPMENT

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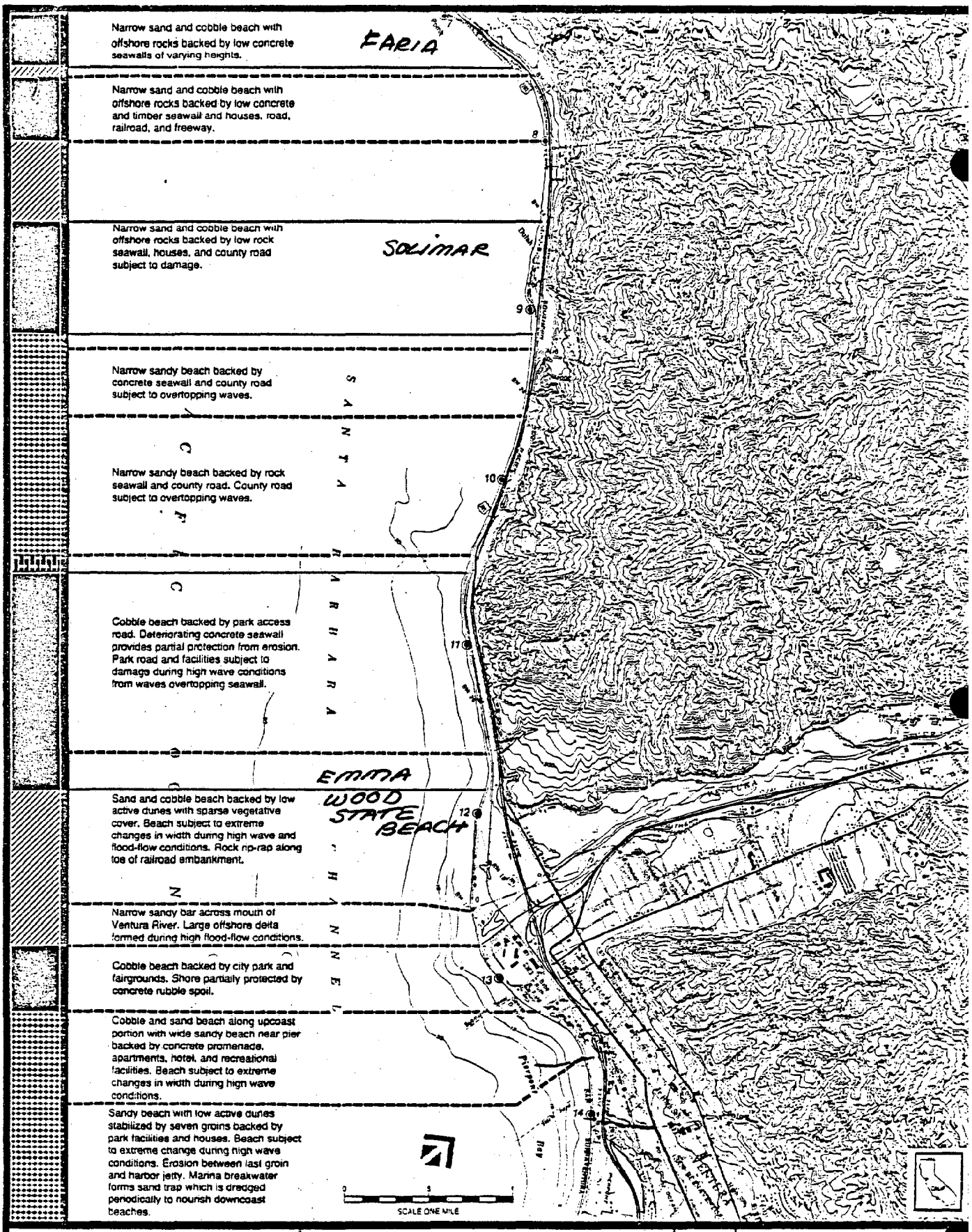


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- PRESENT DEVELOPMENT NON-CRITICAL
- PROTECTIVE BEACH
- FUTURE DEVELOPMENT CRITICAL
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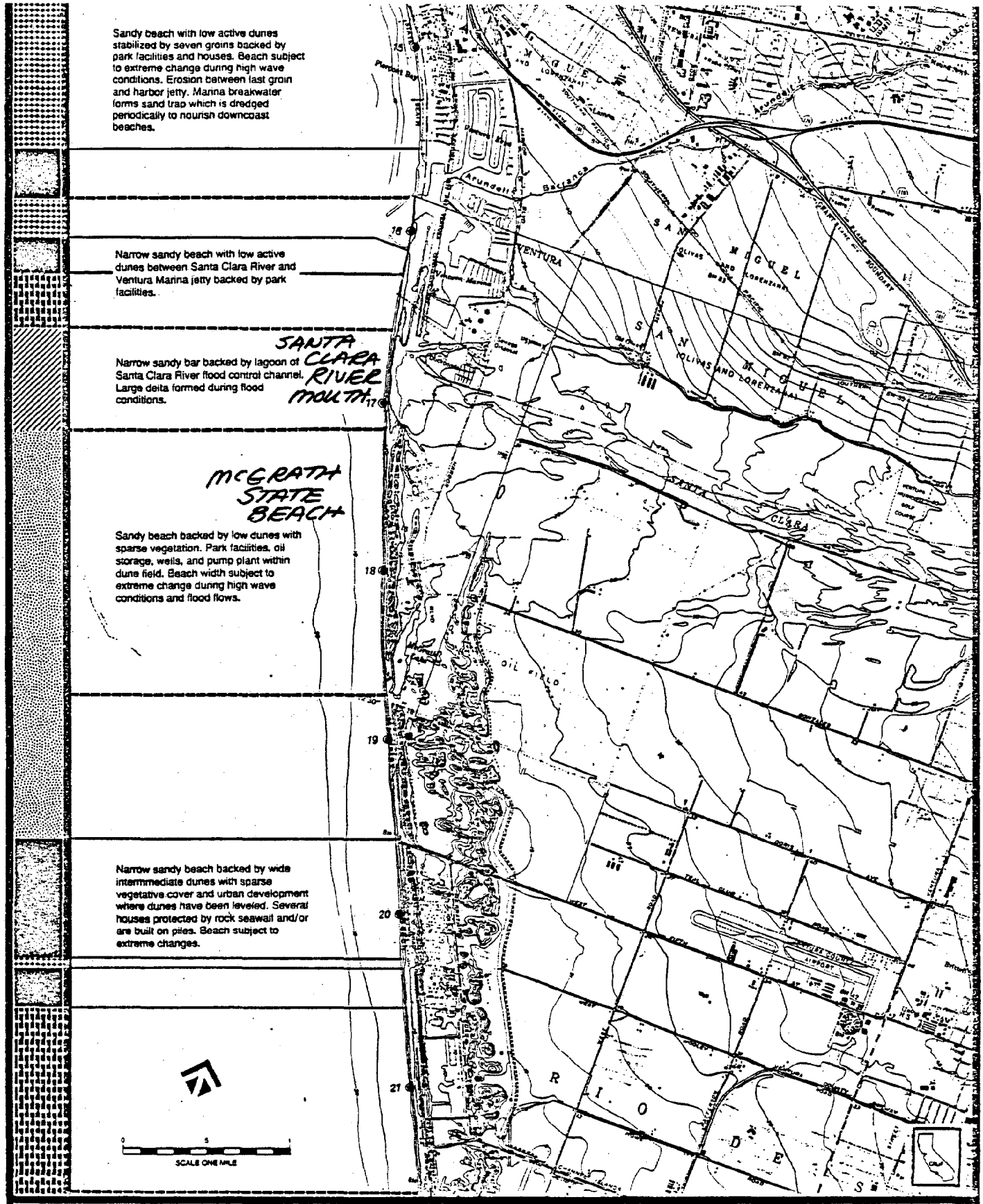


• SHORELINE CONDITION •

- PRESENT DEVELOPMENT CRITICAL
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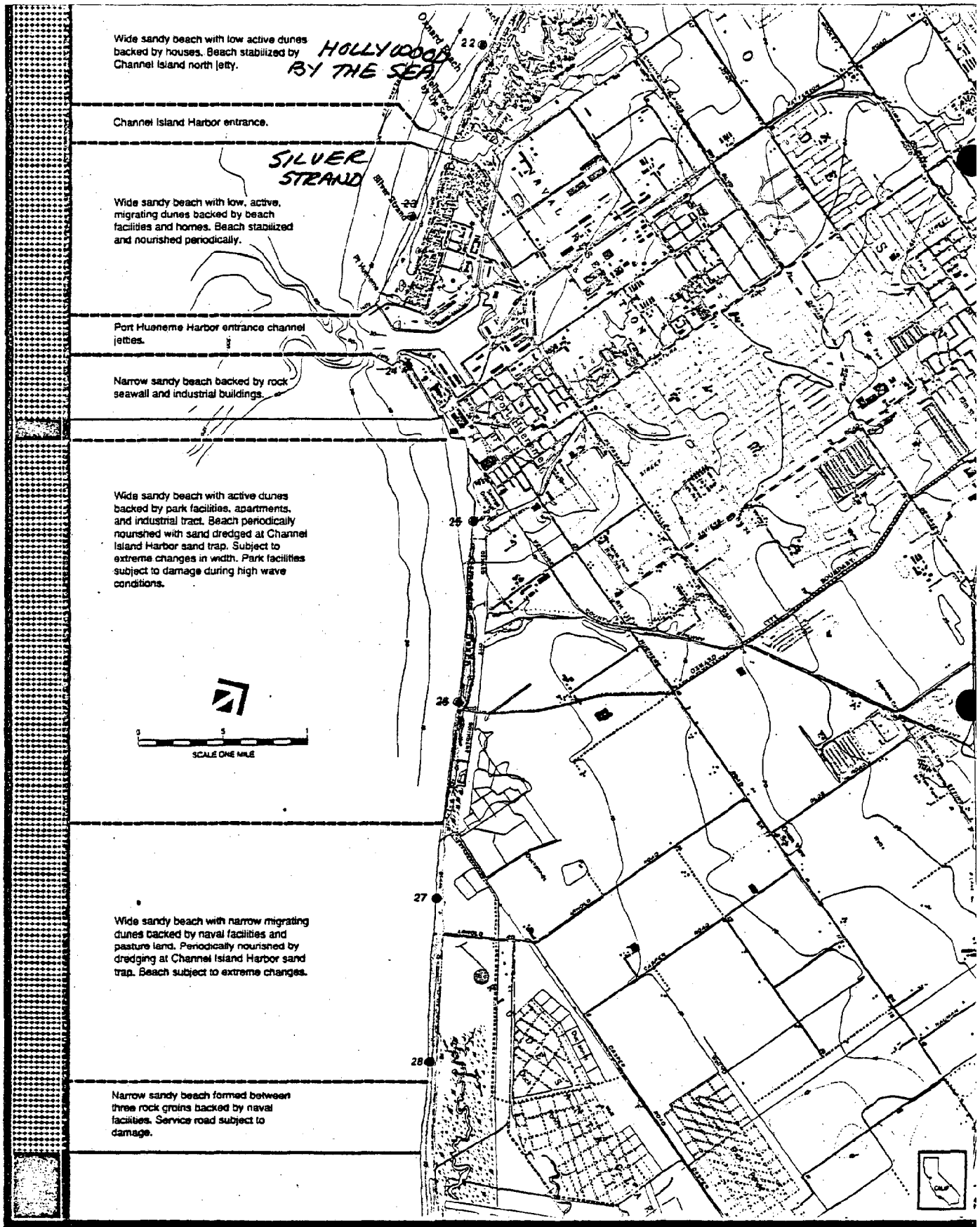


• SHORELINE CONDITION •

- PRESENT DEVELOPMENT CRITICAL
- PRESENT DEVELOPMENT NON-CRITICAL
- FUTURE DEVELOPMENT CRITICAL
- ARTIFICIAL PROTECTION
- PROTECTIVE BEACH
- STABLE ROCK

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MAP NUMBER 102

STATE OF CALIFORNIA — THE RESOURCES AGENCY

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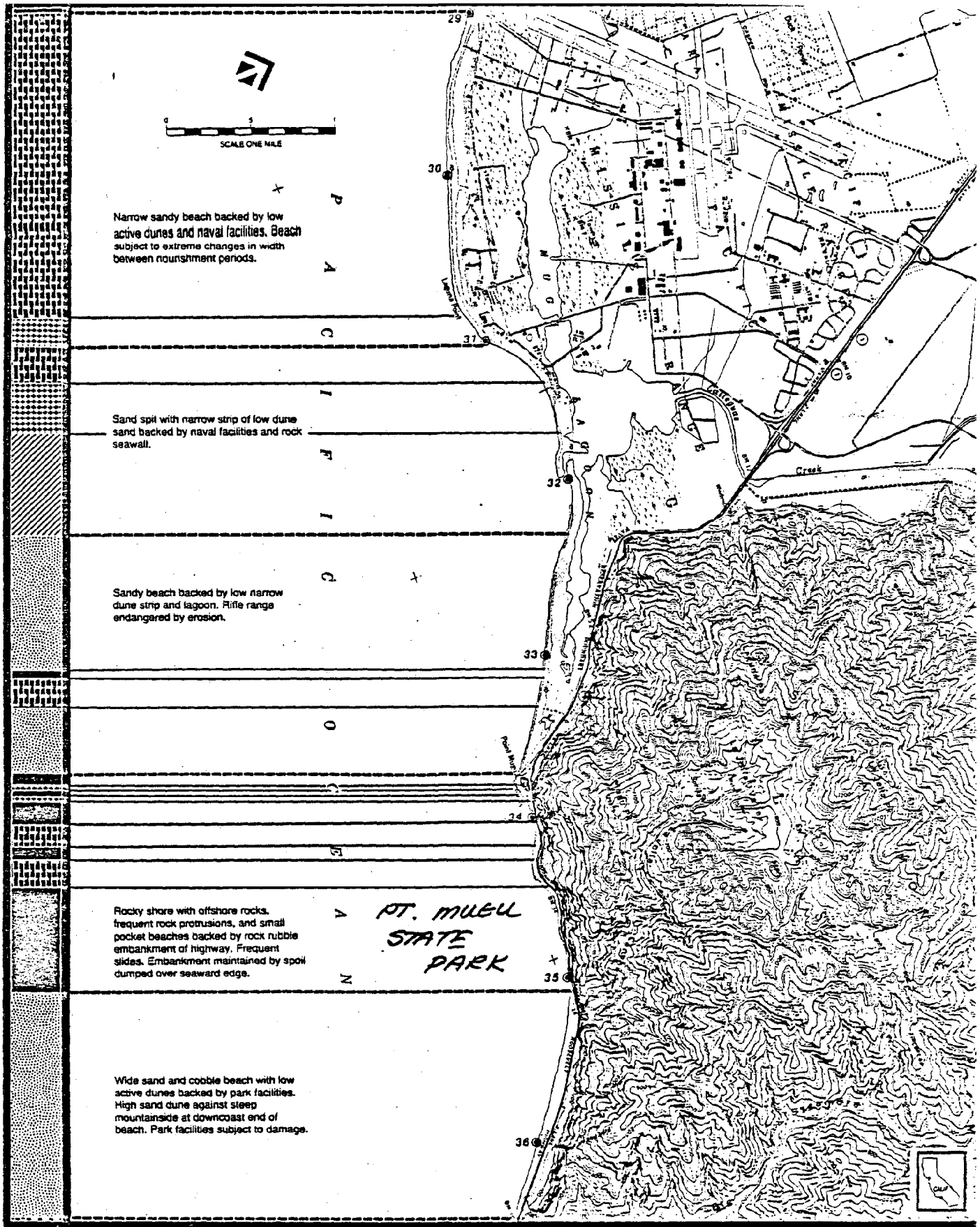


• SHORELINE CONDITION •

- PRESENT DEVELOPMENT CRITICAL
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VENTURA CO. — MI. 29-38

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STATE OF CALIFORNIA THE RESOURCES AGENCY

DEPARTMENT OF NAVIGATION & OCEAN DEVELOPMENT

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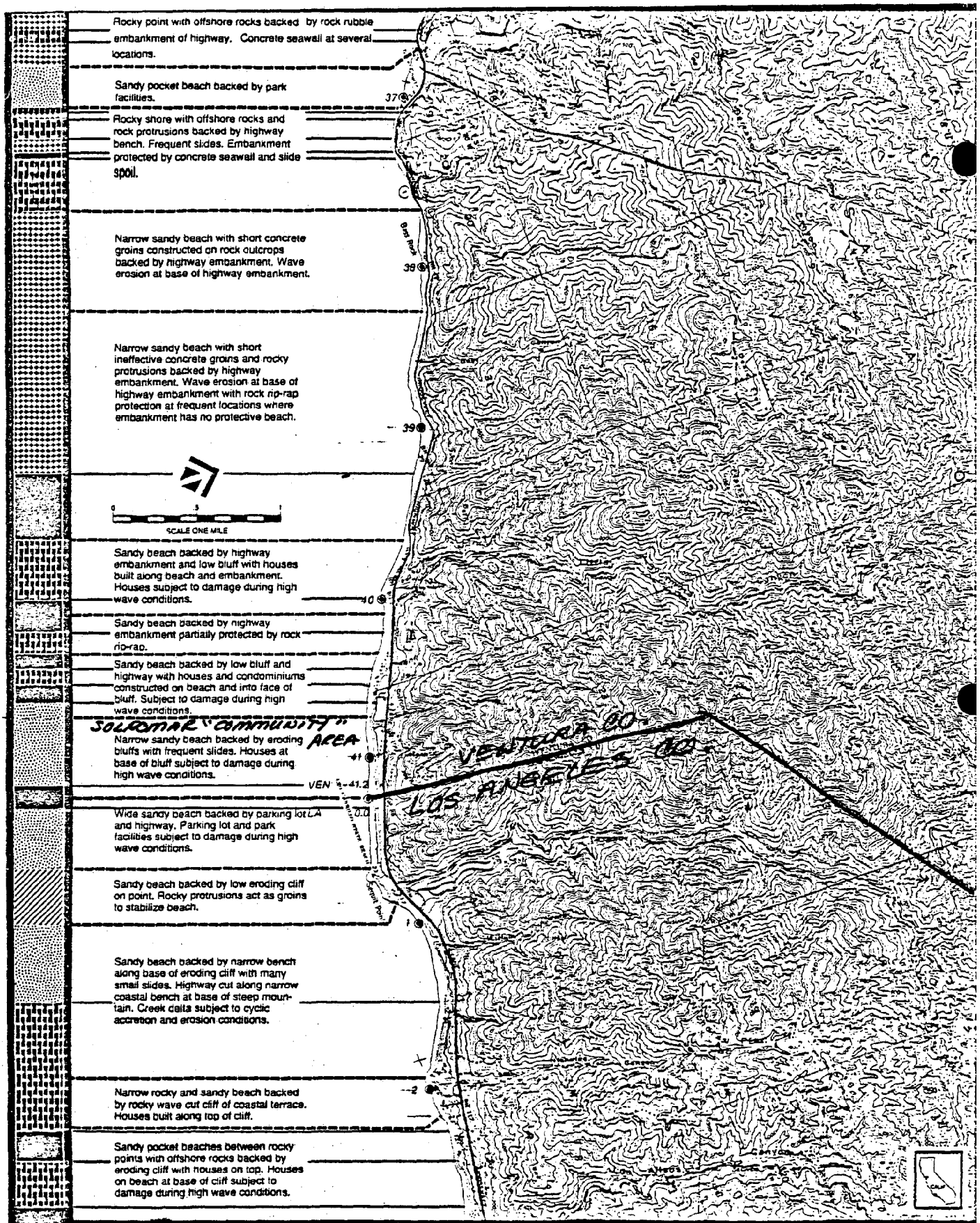


* SHORELINE CONDITION *

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- PRESENT DEVELOPMENT NON-CRITICAL
- PROTECTIVE BEACH
- FUTURE DEVELOPMENT CRITICAL
- STABLE ROCK

VENTURA CO. — MI. 37 - 41.2
LOS ANGELES CO. — MI. 0 - 2

MAP NUMBER 104

STATE OF CALIFORNIA — THE RESOURCES AGENCY

DEPARTMENT OF NAVIGATION & OCEAN DEVELOPMENT

DNOD

1977

(9) potential effects of seismic forces resulting from a maximum credible earthquake;

(10) any other factors that might affect slope stability.

The report should evaluate the off-site impacts of development (e.g. development contributing to geological instability on access roads) and the additional impacts that might occur due to the proposed development (e.g. increased erosion along a footpath). The report should also detail mitigation measures for any potential impacts and should outline alternative solutions. The report should express a professional opinion as to whether the project can be designed so that it will neigher be subject to nor contribute to significant geologic instability throughout the lifespan of the project. The report should use a currently acceptable engineering stability analysis method and should also describe the degree of uncertainty of analytical results due to assumptions and unknowns. The degree of analysis required should be appropriate to the degree of potential risk presented by the site and the proposed project.

In areas of geologic hazard, the Commission may require that a development permit not be issued until an applicant has signed a waiver of all claim against the public for future liability or damage resulting from permission to build. All such waivers should be recorded with the County Recorder's Office. The following ordinance translates these guidelines into ordinance form for an overlay zone that also establishes special use permit procedures. The ordinance is based on a draft prepared by the staff or the County of San Diego and modified by the staff or the Commission. It does not cover all issues covered in this report, but can be used as a starting point.

## CD COASTAL DEVELOPMENT OVERLAY ZONE

Section 1. PURPOSE AND INTENT. The CD Coastal Development Overlay Zone is intended to provide land use regulations along the coastline area including the beaches, bluffs, and the land area immediately landward thereof. Such regulations are intended to be in addition and supplemental to the regulations of the underlying zone or zones, and where the regulations of the CD Zone and the underlying zone are inconsistent, the regulations of the CD Zone shall apply. The purpose of the CD Coastal Development Zone is to provide for control over development and land use along the coastline so that the public's interest in maintaining the shoreline as a unique recreational and scenic resource, promoting public safety, and in avoiding the adverse geologic and economic effects of bluff erosion, is adequately protected. New construction in the CD Coastal Development Zone shall be designed and located so as to minimize risks to life and property and to assure stability and structural integrity and neither create or contribue significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction or protective devices that would substantially alter natural landforms in said Zone.

Section 2. LAND USES. In a CD Zone the following uses are permitted:

1. Any use permitted in the underlying zone subject to the same conditions and restrictions applicable in such underlying zone and to all requirements and regulations of this Article.
2. Beach facilities constructed, owned and maintained by the State of California, County of_____ or such other public agency or district as may be authorized to construct, own and maintain such facilities for the use of the general public; including but not necessarily limited to:

a. Steps and stairways for access from the top of the bluff to the beach.

b. Toilet and bath houses.

c. Parking lots meeting all requirements of Section _____ of this ordinance.

d. Refreshment stands having no seating facilities within the structure.

e. Stands for the sale of bait and fishing tackle and the rental only of surfboards, air matresses and other sports equipment for use in the water or on the beach.

f. Lifeguard towers and stations and other life saving and security facilities.

h. Trash containers.

i. Beach shelters.

3. Private beach facilities and structures as follows:

a. Fire rings and similar picnic facilities.

b. Trash containers.

c. Lifeguard towers.

d. Signs declaring property ownership and access conditions or limitations provided not more than four (4) such signs each not exceeding four (4) square feet in area shall be permitted.

e. The following, subject to the issuance of a special use permit therefor:

(1) Toilet facilities and bath houses provided such structures are so placed and constructed that the floor thereof is at a elevation no lower than 15 feet above mean sea level (North American Datum, 1929) and further provided that such facilities shall be connected to and all effluent therefrom shall be discharged into a public sewer;

(2) Permanent or temporary beach shelters provided that such shelters shall be at least 50 percent open on the seaward side and that permanent shelters are so placed and constructed that the floor thereof is at an elevation no lower than 15 feet above mean sea level (North American Datum, 1929); and

(3) Sea walls or other structural devices where necessary to prevent erosion of the base of the bluff as the result of wave action provided that such sea wall or other structural device. (i) shall be constructed essentially parallel to the base of the bluff; (ii) shall not obstruct or interfere with the passage of people along the beach at any time, (iii) is necessary to protect coastal - dependent uses or to protect existing principal structures or public beaches in danger from erosion; (iv) is designed to eliminate or mitigate adverse impacts on local beaches, shoreline sand supply or transport. (v) shall assure stability and structural integrity for the economic life of the structures or uses it is to protect; (vi) shall neither create nor contribute significantly to erosion or instability of adjacent property; and (vii) shall mitigate or eliminate any alteration of natural landforms or adverse effects to the scenic qualities of the coast.

(4) Upon the issuance of a special use permit, any use allowed in the underlying zone by special use permit; provided that the Board of Supervisors determines that such use is consistent with the intent and purpose of the CD Zone.

(5) A record of Survey map shall be filed with the State Lands

Commission and the Planning Department showing the following information when any construction activity is proposed that alters any beach or the toe of any bluff:

(1) An accurate positioning of the present, preconstruction, ordinary high-water line;

(2) Sufficient ties to existing record monuments which will not be disturbed by proposed construction;

(3) The accurate position of any monument shown on a map filed in an office public record which will be disturbed by the proposed construction, together with a plan to replace the monument in its original position or to replace it with another monument tied to nearby recorded monuments.

4. Upon the issuance of a special use permit, any use allowed in the underlying zone by special use permit; provided that the Board of Supervisors determines that such use is consistent with the intent and purpose of the CD Zone.

Section 2. SPECIAL USE PERMIT REQUIRED. Notwithstanding any other provisions of this ordinance, no building permit may be issued or construction commenced on any building or structure in the CD Coastal Development Overlay Zone, except one-family dwellings and structures appurtenant thereto, unless a special use permit therefor has first been granted by the Board of Supervisors. Applications for such special use permit approval shall be submitted to the Director of _____ and shall be accompanied by such data and information as required by this Article for a site plan application.

Section 3 LIMITATIONS ON PERMITTED USES. Uses permitted in the CD Zone shall be subject to the following development criteria:

1. Development Criteria - Beach. For the purposes of this Article, beach shall be considered as that area lying seaward of the first contour line defining an elevation 15 feet above mean sea level (North American Datum, 1929). No structures of any type shall be erected or placed on

the beach except:

a. Structures pursuant to a permitted use as specified in Section 2, subsections 2 and 3 of this Article.

2. Development Criteria - Bluff. For the purposes of this Article, a bluff is a scarp or steep face of rock, decomposed rock, sediment or soil resulting from erosion, faulting, folding, or excavation of the land mass. The bluff may be simple planar or curved surface or it may be steplike in section. For the purposes of this Article, bluff is limited to those features having vertical relief of ten feet or more, and whose toe is or may be subject to marine erosion. "Bluff edge" is the upper termination of a bluff. When the top edge of the bluff is rounded away from the face of the bluff as a result of erosional processes defined as that point nearest the bluff beyond which the downward gradient of the land surface increases more or less continuously until it reaches the general gradient of the bluff. In a case where there is a step-like feature at the top of the bluff face, the landward edge of the topmost riser shall be taken to the bluff edge. In those cases where irregularities, erosion intrusions, structures or bluff stabilizing devices exist on a subject property to that a reliable determination of the bluff edge cannot be made by visual or topographic evidence, the Director of _____ shall make such determination as to the location of the bluff edge and the bluff setback after evaluation of a geologic and soil report in accordance with Board of Supervisors Policy. No structure shall be placed on or extend beyond the face of the bluff and no tunnel or shaft shall be sunk into the face of the bluff, except that the following structures may be placed thereon and alterations made thereto subject to issuance of a special use permit therefore authorizing such structures or alterations.

a. Stairways, ramps and other structures or devices designed and intended to provide public access from the top of the bluff to the beach, provided that construction thereof shall not require excavation of the bluff face except to the extent necessary to accommodate placement of vertical or lateral support members;

b. Fences of non-view obscuring type, as reasonably necessary to deter trespassing or to discourage indiscriminate traverse upon the face of the bluff; and

c. Bluff repair and erosion control measures such as retaining walls and other appropriate devices, provided, however, that such measures and devices shall be limited to those necessary to repair existing man-caused damage to the bluff face, such as casual excavations, or to prevent or retard additional natural erosion, such as along drainageways or erosion gullies on the face of the bluff; provided further that no such measures or devices shall cause significant alteration in the natural character of the bluff face.

3. Development Criteria - Blufftop.

a. Bluff setback.

(1) No building or structure shall be placed or erected closer than 40 feet from any point of the bluff edge, except as provided herein.

(2) A bluff setback in excess of 40 feet may be required by the Director of _____ or the Board of Supervisors following evaluation of geologic and soil reports for a particular site in accordance with Board of Supervisors Policy.

(3) In areas where there is no bluff, all structures, except those established pursuant to subsection 1 of this Section, shall be located landward of the first contour line defining an elevation 15 feet above mean sea level (North American Datum, 1929) as follows

(a) Main buildings 15 feet; and

(b) Accessory structures, 10 feet.

b. Limitation on Building Width and Lot Coverage.

(1) For any one-family or two family dwelling or accessory building, no story above the first story shall exceed a width of one-half the lot width of the lot or lots on which such dwelling or building is located.

(2) All two-family or multiple dwellings or accessory structures hereafter constructed shall provide a vista corridor with an unobstructed width equivalent to one-third (1/3) the average width of the lot or lots on which the proposed dwellings are to be located. Property abutting the end of a public street which meets the top edge of the coastal bluff may include one-half the width of the street end as credit for up to one-half of the required vista corridor. Any object exceeding two feet in height above finished grade shall be considered an obstruction except: (a) Fences with an open area to obstructed area ratio of 6:1; (b) Trees which at maturity will not obstruct vision from finished grade to approximately eight feet above finished grade.

c. Limitation on Maximum Number of Dwelling Units. For the purposes of calculating the maximum allowable number of dwelling units in any zone, only the lot area eastward of the bluff edge shall be used.

d. Grading and Excavation. Grading and excavation shall be the minimum necessary consistent with development objectives, the provisions of this Article and the following requirements:

(1) Building sites shall be graded to direct surface water away from the top of the bluff, or, alternatively, drainage shall be handled in a manner satisfactory to the County which will prevent damage to the bluff by surface and percolating water.

(2) No excavation, grading or deposit of natural materials shall be permitted on the beach or the face of the bluff except to the extent necessary to accomplish construction pursuant to subsections 1 and 2 of this section.

Section 3.1. FINDING OF PUBLIC BEACH ACCESS RIGHTS. No building permit shall be issued for any construction with the CD Zone unless the Director or the Board of Supervisors pursuant to the provisions of this section shall make findings relative to public rights of beach access or usage, if any, in the real property upon which the proposed construction is to be located, and approve the plan of construction.

1. The applicant for a building permit at the time of application shall file with the Director of _____ a plan of the proposed construction for a finding whether the proposed construction will interfere with any public rights of beach access or usage. When applicable, the plan shall contain the following:

a. Boundaries of real property, location of beach and nearby streets;

b. Location and height of all proposed structures, including buildings, walls, fences, free-standing signs, swimming pools and game courts and the location and extent of individual building sites;

c. Locations and dimensions of ingress and egress points, interior roads and driveways, parking areas and pedestrian walkways;

d. Location of important drainageways;

e. Proposed grading and removal or placement of natural materials, including finished topography of the site;

2. Within thirty days after he shall have received the plan, the Director of _____ shall make a finding whether the proposed construction will interfere with any public rights of beach access or usage in, over and across the site of the proposed construction. If the Director of _____ finds that the proposed construction will not interfere with any public rights of beach access or usage, he shall approve the plan and notify the applicant of such finding.

3. If the Director of _____ finds that the proposed construction will interfere with any public rights of beach access or usage he shall disapprove the plan or he may conditionally approve such plan subject to such modifications as will insure that the proposed construction will not interfere with such public rights. The Director of _____ shall notify the applicant of such finding or conditional approval. of such finding or conditional approval.

4. A finding by the Director of _____ that the proposed construction will not interfere with any public rights of beach access or usage shall not relieve the applicant from the necessity of obtaining such other approvals as may be required by this ordinance, the County Code or other law.

5. The applicant may appeal the decision of the Director of _____ by filing with such director an appeal in writing within 15 days from the decision and setting forth therein the basis of such appeal. The Director of _____ may affirm the prior disapproval or conditional approval or may approve the plan with or without modifications. If the Director of _____ affirms the prior disapproval or conditional approval, the papers and documents applicable to the matter shall be forthwith filed with the Board of Supervisors.

6. Within 40 days from such filing of the appeal the Board of Supervisors shall consider said appeal and may either:

a. Affirm decision of the Director of _____, or

b. Hold a hearing.

Following the hearing the Board of Supervisors may affirm the decision of the Director of _____ or render such decision as it considers appropriate.

If the Board of Supervisors finds that any unadjudicated rights of the public which may have been acquired by implied dedication are such that they constitute a hazard to any user of such rights or that their exist other rights of beach access or usage sufficiently near and equal to or better in quality and quantity to make preservation of the unadjudicated rights in question unnecessary for any public benefit and that it is not in the public interest that the County

(2) The extent of potential damage that might be incurred by the development during all foreseeable normal and unusual conditions, including ground saturation and shaking caused by the maximum credible earthquake;

(3) The effect the project could have on the stability of the bluff.

As a minimum the geothechnical reports shall consider describe and analyse the following:

(1) cliff geometry and site topography, extending the surveying work beyond the site as needed to depict unusual geomorphic conditions that might affect the site;

(2) historic, current and forseeable cliff erosion including investigation of recorded land surveys and tax assessment records in addition to the use of historic maps and photographs were available and possible changes in shore configuration and sand transport;

(3) geologic conditions, including soil, sediment and rock types and characteristics and structural features, such as bedding, joints, and faults;

(4) evidence of past or potential landslide conditions, the implications of such conditions for the proposed development, and the potential effects of the development on landslide activity;

(5) impact of construction activity on the stability of the site and adjacent area;

(6) ground and surface water conditions and variations, including hydrologic changes caused by the development (i.e. introduction of sewage effluent and irrigation water to the ground water system, alterations in surface drainage);

(7) potential erodibility of site and mitigating measures to be used to ensure minimized erosion problems during and after construction (i.e. landscaping and drainage design);

(8) effects of marine erosion on seacliffs;

(9) potential effects of earthquakes including: (a) ground shaking caused by maximum credible earthquake, (b) ground failure due to liquefaction, lurching, settlement and sliding, and (c) surface rupture;

(10) any other factors that might affect slope stability.

(11) the potential for flooding due to sea surface superelevation (wind and wave surge, low barometric pressure and astronomical tide), wave run-up, tsunami and river flows. This potential should be related to one hundred and five hundred year recurrance intervals;

(12) a description of any hazards to the development caused by possible failure of dams, reservoirs, mudflows or slides occuring off the property and caused by forces or activities beyond the control of the applicant; and

(13) mitigating measures and alternative solutions for any potential impact.

The report shall also express a professional opinion as to whether the project can be designed or located so that it will neither be subject to nor contribute to significant geologic instability throughout the lifespan of the project. The report shall use a currently acceptable engineering stability analysis method, shall describe the degree of uncertainty of analytical results due to assumptions and unknowns, and at a

minimum, shall cover an area from the toe of the bluff inland to a line described on the bluff top by the intersection of a plan inclined at a 20° angle from horizontal passing through the toe of the bluff or 50 ft. inland from the bluff edge, whichever is greater. The degree of analysis required shall be appropriate to the degree of potential risk presented by the site and the proposed project.

j. A waiver signed by the property owner and applicant of all claim against the County for future liability or damage resulting from permission to build or claim of any right to construct a protective shoreline structure for the life of the project. All such waivers shall be concurred in by any holder of a lien against the property and shall be notarized and recorded in the Office of the County Recorder.

2. The Director of _____ shall approve the site plan if said Director finds that:

a. All elements of the proposed development are sited and designed to assure stability and structural integrity for their expected economic lifespans and are consistent with the intent and purpose and meet the requirements of this Article.

b. Buildings and structures will be so located on the site as to create a generally attractive appearance and be agreeably related to surrounding development and the natural environment.

c. Buildings, structures, and landscaping will be so located as to preserve to the degree feasible any ocean views as may be visible from the nearest public street.

d. Insofar as is feasible, natural topography and scenic features of the site will be retained and incorporated into the proposed development.

e. Any grading or earth-moving operations in connection with the proposed development are planned and will be executed so as to blend with the

existing terrain both on and adjacent to the site, and will not result in the defacement, or decrease the stability of the bluff.

f. The development will not require any shoreline protective structures to protect it from erosion for the life of the project. The Director of _____ may approve a site plan subject to such reasonable conditions as should be imposed.

3. Within 60 days of receipt of an application for site plan review and all material specified in subparagraph 1 of this Section, the Director of _____ shall approve, conditionally approve or disapprove such site plan. The said 60-day period may be extended with the written consent of the applicant. If the Director of _____ does not act on said site plan within the specified time limit or extension thereof, said site plan shall be deemed to have been denied. Any disapproval or other decision rendered pursuant to this Section may be appealed pursuant to Section _____ of this ordinance, except that the Planning Commission's action on such appeal shall be a recommendation only and shall be transmitted directly to the Board of Supervisors for final action.

a. Any site plan application proposing modification of any development criteria of Section _____ of this Article shall be accompanied by a filing fee of _____ and shall be considered by the Board of Supervisors at a public hearing within 60 days of receipt of a complete application. Notice of such public hearing shall be given as provided for a variance or special use permit in Article _____ of this Ordinance.

topographical configuration of the land and provided that no such activity shall take place closer than 10 feet from the bluff edge.

3. Minor excavation not exceeding one foot in depth within the required bluff setback, or placement of natural materials incidental to installation of permitted minor structural features not requiring a grading permit such as fences, walls, walkways, patios and similar elements customarily accessory to permitted use, provided such excavation or placement of materials conforms to all requirements of this Article, does not in itself alter the general overall topographical configuration of the land, and provided that no such activity shall take place closer than 10 feet from the bluff edge.

4. The Director of _____ may waive or modify requirements of this Section relative to the form of a Site Plan application when he finds that provisions of this Article have been or will be fulfilled by the conditions of a special use permit or other means.

5. The Director of _____ may, upon request of the applicant, approve a modification of an approved conditionally approved site plan if he finds that the modification is not material and is consistent with the intent, purpose and requirements of the CD Zone.

6. Any approval of a site plan shall expire within one (1) year of such approval except where construction and/or use in reliance on such site plan has commenced prior to its expiration. If construction and/or use in reliance thereupon has not commenced within the one (1) year period, said period may be extended by the Director of _____ at any time prior to the original expiration date.

Section 5.5 GRADING. No grading, removal or deposit of natural materials shall take place on any lot or parcel in the CD Zone except pursuant to a grading permit which has been issued in connection with a building permit for a structure which conforms to all provisions of this Article; or, where no structure is involved, pursuant to a grading permit issued with the concurrence of the Directorof; or, where no grading permit is required, pursuant to an application to do minor grading which has been approved by the Director of _____. The following activities are exempt from the requirements of this Section.

1. Tilling or preparation of land for agricultural purposes provided that no such activity shall take place closer than 10 feet from the bluff edge.

2. Minor excavation or placement of natural materials incidental to the planting of trees and shrubs and the construction of other landscape features not requiring a grading permit, provided that such excavation or placement of materials does not in itself alter the general overall